

## Boosting Native American students' math scores

May 5, 2014



Mara Herrera joined San Felipe Pueblo Elementary School north of Albuquerque as a special education teacher in 2000 and by 2012 had transitioned to teaching 6<sup>th</sup>-grade math as a general education instructor for the school. But the switch to math was not without challenges and Herrera, along with other San Felipe teachers, turned to Los Alamos National Laboratory's Northern New Mexico Math and Science Academy for assistance.

Started in 2000, the academy, a three-year professional development program, encourages elementary- and middle-school teachers to take a creative approach to teaching science and math. The teachers, and subsequently their students, explore multiple ways to approach math problems and then collectively discuss the merits and pitfalls of each strategy.

The teachers meet during three-week summer institutes and receive school-year classroom support as well. The program's "Ir-Rational Number Institute" meets on additional Saturdays.

Herrera likes the confidence she has gained from attending the sessions. "Since I joined the Math and Science Academy my math knowledge has increased exponentially," she noted. "I understand now that I need to teach conceptually, rather than procedurally, and that I need to help my students connect math to real life."

Herrera develops challenges and projects to encourage her students to apply the skills they are learning. She asks the students to design their dream home, for instance, and then calculate the area and perimeter for each room and the entire space.

"I am amazed by how much math my students are able to do and apply now," Herrera said. "They have great discussions within their teams, exploring and discovering together why and how algorithms and math in general work."

#### Improved scores

The improvements in student math scores for schools participating in the Math and Science Academy are impressive and are boosted even further when accompanied by tutoring programs for students, as is the case for San Juan Elementary School, located in Ohkay Owingeh Pueblo north of Española.

San Juan Elementary is one of seven pueblos currently participating in the Math and Science Academy, along with San Felipe, Jemez, San Ildefonso, Santa Clara, Taos and Zia. At San Juan, the math scores for the school's Native American students increased by a remarkable 44 percent between 2005 and 2013 and 17 percent for its Hispanic students.

Herrera's own academic career is taking off as well. She already had a master's degree in Multicultural Special Education when she arrived at San Felipe Pueblo Elementary School but is now working toward a second master's in Educational Leadership thanks to a partnership between the Math and Science Academy and the University of New Mexico. Herrera also recently was elected to become a member of the prestigious Phi Kappa Phi academic honor society.

To find out more about the academy, visit the [Northern New Mexico Math and Science Academy](#) website, consult a related [program overview](#) (pdf) and listen to the "What is the Ir-Rational Number Institute" and "Teaching Science to Teachers" podcasts on the [Soundcloud](#) podcast site.

**Los Alamos National Laboratory**

[www.lanl.gov](http://www.lanl.gov)

**(505) 667-7000**

**Los Alamos, NM**

Operated by Los Alamos National Security, LLC for the Department of Energy's NNSA

